

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA**

**THE GREEN PET SHOP
ENTERPRISES, LLC,**

Plaintiff

Civil Action No.:

v.

**1616 HOLDINGS, INC. d/b/a
FIVE BELOW,**

JURY TRIAL DEMANDED

Defendant.

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff The Green Pet Shop Enterprises, LLC (“Green Pet” or “Plaintiff”) complains against 1616 Holdings, Inc. d/b/a Five Below (“Five Below” or “Defendant”) as follows:

NATURE OF THE ACTION

1. This is a civil action for infringement of United States Patent Nos. 8,720,218 (“218 patent”) and 11,375,685 (“685 patent”).

THE PARTIES

2. Plaintiff Green Pet is an Illinois limited liability company having a place of business at 770 Lake-Cook Rd., Suite 120, Deerfield, Illinois 60015. Green Pet manufactures and brings to market high quality, unique, and eco-friendly pet products.

3. On information and belief, Defendant Five Below is a domestic business corporation having a principal place of business located at 701 Market Street, Suite 200, Philadelphia, PA 19106.

JURISDICTION

4. This action arises under the patent laws of the United States, *e.g.*, 35 U.S.C. §§ 1 et seq., 271, 281, 283-285. This Court has jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

VENUE

5. Venue is proper in this Court under 28 U.S.C. §1400(b) because Five Below has its corporate office located in the State of Pennsylvania.

FACTUAL BACKGROUND

A. Patents In Suit

6. The 218 patent is called “Pressure Activated Recharging Cooling Platform” and relates to cooling platforms for a variety of uses, including for pets. The inventor of the 218 patent is Gerard E. Prendergast. The 218 patent was filed on April 14, 2010. On May 13, 2014, the United States Patent and Trademark Office issued the 218 patent.

7. The 218 patent was assigned to Green Pet on February 9, 2012. Green Pet is the lawful owner by assignment of all rights, title and interest in and to the 218 patent and possesses all rights of recovery under the 218 patent,

and has standing to sue for infringement of the Green Pet Patent. A true and correct copy of the 218 patent is attached hereto as Exhibit 1.

8. The 218 patent is valid and enforceable.

9. The 685 patent is called “Pressure Activated Recharging Cooling Platform” and relates to cooling platforms for a variety of uses, including for pets. The inventor of the 685 patent is Gerard E. Prendergast. The 685 patent is a continuation of the 218 patent and was filed on December 2, 2021. On July 5, 2022, the United States Patent and Trademark Office issued the 685 patent.

10. Green Pet is the lawful owner by assignment of all rights, title and interest in and to the 685 patent and possesses all rights of recovery under the 685 patent, and has standing to sue for infringement of the Green Pet Patent. A true and correct copy of the 685 patent is attached hereto as Exhibit 2.

11. The 685 patent is valid and enforceable.

B. Accused Product

12. Five Below makes, imports into the United States, offers for sale, sells, and/or uses in the United States pet products, including, without limitation, a pet bed called "Pet Cooling Mat" (“Accused Product”) attached as Exhibit 3.

13. The Accused Product is covered by at least claim 15 of the 218 patent and by claim 1 of the 685 patent.

14. On June 23, 2023, Green Pet sent a letter to Five Below informing it of

its infringement of the '218 and '685 patents and asking for a response. Five Below did not respond to that demand letter but directed Green Pet to the supplier of the accused product.

15. Further investigation showed that the supplier to which Five Below directed Green Pet was actually not the supplier of the accused product.

16. Although Green Pet alerted Five Below to its mistake, Green Pet has not received any other response from Five Below.

C. Infringement

17. As an example of Five Below's infringing behavior, here is claim 1 of the 685 patent:

A cooling platform comprising:

a temperature regulation layer comprising a cooling composition that absorbs heat when activated and releases heat when deactivated,

wherein the cooling composition undergoes an endothermic reaction when activated,

wherein the endothermic reaction is activated at least partially by an application of pressure, and

wherein the cooling platform is repeatedly activatable and deactivatable.

18. The 685 patent claims a cooling platform comprising a temperature regulation layer. The Accused Product has a layer that regulates temperature between the gel inside that layer and an object outside that layer.

19. The 685 patent temperature regulation layer is comprised of a cooling

composition that absorbs heat when activated and releases heat when deactivated. The Accused Product is pressure activated.

20. The '685 patent claims that the cooling platform is repeatedly activatable and deactivatable. The heat that has been absorbed by the pet lying on your mat must dissipate when the pet removes itself from the mat. The process of the Accused Product is likewise repeatable.

21. As the Accused Product satisfies all the elements of at least claim 1 of the '685 patent, it infringes on at least one claim of one of Green Pet's patents.

C. Green Pet Commercial Embodiment

22. Green Pet sells a product called "Cool Pet Pad." The Cool Pet Pad is covered by the 218 and 685 patents. Green Pet began marking its Cool Pet Pad products with relevant patent numbers no later than 2014.

COUNT I **(INFRINGEMENT OF U.S. PATENT NO. 8,720,218)**

23. Green Pet incorporates each of the preceding paragraphs as if fully set forth herein.

24. Five Below has been and is now infringing, directly and indirectly by way of inducement and/or contributory infringement, literally and/or under the doctrine of equivalence, the 218 patent in this District and elsewhere by making, using, offering for sale, importing, and/or selling products that fall

within the scope of at least one claim of the 218 patent without license or authorization. Such acts constitute infringement under at least 35 U.S.C. § 271 (a), (b) and (c).

25. Five Below has been aware of the 218 patent since at least approximately July 17, 2012, when the 218 patent was first published by the United States Patent and Trademark Office.

26. As a direct and proximate consequence of the infringement, Green Pet has been, is being and, unless such acts and practices are enjoined by the Court, will continue to be injured in its business and property rights, and has suffered, is suffering, and will continue to suffer injury and damages for which it is entitled to relief under 35 U.S.C. § 284 adequate to compensate for such infringement, but in no event less than a reasonable royalty.

27. Green Pet is entitled to recover from Five Below the damages sustained by Green Pet as a result of Five Below's wrongful acts in an amount subject to proof at trial.

COUNT II
(INFRINGEMENT OF U.S. PATENT NO. 11,375,685)

28. Green Pet incorporates each of the preceding paragraphs as if fully set forth herein.

29. Five Below has been and is now infringing, directly and indirectly

by way of inducement and/or contributory infringement, literally and/or under the doctrine of equivalence, the 685 patent in this District and elsewhere by making, using, offering for sale, importing, and/or selling products that fall within the scope of at least one claim of the 685 patent without license or authorization. Such acts constitute infringement under at least 35 U.S.C. § 271 (a), (b) and (c).

30. Five Below has been aware of the 685 patent since at least approximately June 16, 2022, when the 685 patent was first published by the United States Patent and Trademark Office.

31. As a direct and proximate consequence of the infringement, Green Pet has been, is being and, unless such acts and practices are enjoined by the Court, will continue to be injured in its business and property rights, and has suffered, is suffering, and will continue to suffer injury and damages for which it is entitled to relief under 35 U.S.C. § 284 adequate to compensate for such infringement, but in no event less than a reasonable royalty.

32. Green Pet is entitled to recover from Five Below the damages sustained by Green Pet as a result of Five Below's wrongful acts in an amount subject to proof at trial.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Green Pet asks this Court to enter judgment against

Five Below and against its respective subsidiaries, affiliates, agents, servants, employees and all persons in active concert or participation with them, granting the following relief:

- A. An adjudication that Five Below has infringed one or more of the claims of the 218 and 685 patents.
- B. The ascertainment of and award to Green Pet of actual damages from the infringement of one or more claims of the 218 and 685 patents, together with prejudgment and post-judgment interest pursuant to 35 U.S.C. § 284.
- C. A finding that this case is exceptional and the award of reasonable attorneys' fees, costs, and expenses in this action to Green Pet, pursuant to 35 U.S.C. § 285.
- D. The issuance of a preliminary and/or permanent injunction prohibiting further infringement, inducement and contributory infringement of the Green Pet Patent pursuant to 35 U.S.C. § 283.
- E. An order requiring that Five Below account for all gains, profits, and advantages derived by its infringement of the 218 and 685 patents in violation of 35 U.S.C. § 271 and that Five Below pay to Green Pet all damages suffered by Green Pet.
- F. Such other and further relief as this Court or a jury may deem proper and just.

JURY DEMAND

Green Pet demands a trial by jury on all issues so triable.

FREEMANN LAW OFFICES
A PROFESSIONAL CORPORATION

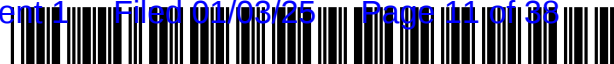
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Dated: January 2, 2025 Attorneys for Green Pet Shop Enterprises LLC

EXHIBIT 1



US008720218B2

(12) **United States Patent**
Prendergast

(10) **Patent No.:** **US 8,720,218 B2**

(45) **Date of Patent:** **May 13, 2014**

(54) **PRESSURE ACTIVATED RECHARGING COOLING PLATFORM**

(75) Inventor: **Gerard E. Prendergast**, Chicago, IL (US)

(73) Assignee: **The Green Pet Shop Enterprises, LLC**, Northbrook, IL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1064 days.

(21) Appl. No.: **12/760,045**

(22) Filed: **Apr. 14, 2010**

(65) **Prior Publication Data**

US 2011/0252822 A1 Oct. 20, 2011

(51) **Int. Cl.**

F25D 23/12 (2006.01)

F25D 3/08 (2006.01)

F25D 3/10 (2006.01)

(52) **U.S. Cl.**

USPC **62/259.3**; 62/529; 62/457.2

(58) **Field of Classification Search**

USPC 62/259.3, 457.2, 529
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,064,835 A * 12/1977 Rabenbauer 119/28.5
4,311,022 A * 1/1982 Hall 62/457.2
4,821,354 A * 4/1989 Little 5/422
D379,730 S * 6/1997 Dickman D6/608
5,991,948 A * 11/1999 Stanley et al. 5/709

6,132,455 A * 10/2000 Shang 607/108
6,210,427 B1 * 4/2001 Augustine et al. 607/96
6,708,646 B1 * 3/2004 Wang 119/28.5
7,021,848 B1 * 4/2006 Gruenbacher et al. 401/1
7,028,344 B2 * 4/2006 Toth 2/413
7,036,162 B1 * 5/2006 Gatten 5/421
8,011,194 B2 * 9/2011 Dimmitt 62/115
2009/0084320 A1 * 4/2009 Reusche et al. 119/28.5

OTHER PUBLICATIONS

Omidian et al., Sep. 15, 2006, Macromolecular Bioscience, vol. 6, issue 9, 703-710.*

* cited by examiner

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Assistant Examiner — Filip Zec

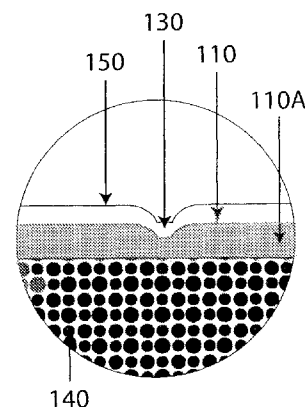
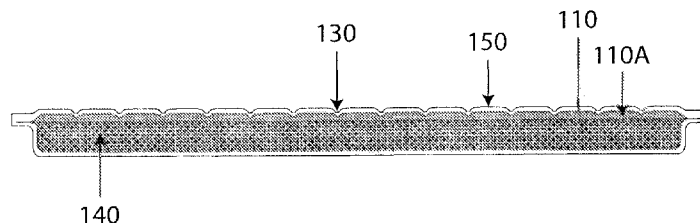
(74) *Attorney, Agent, or Firm* — Musick Peeler, LLP; Reid Dammann

(57) **ABSTRACT**

A cooling platform for cooling an object is provided. The cooling platform comprises a temperature regulation, a support layer, and a channeled covering layer. The temperature regulation layer is adapted to hold a composition. The temperature regulation layer has a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance lesser than the predefined distance. The support layer is substantially bonded to the bottom side of the temperature regulation layer and is comprised of material sufficiently pliable to deform and sufficiently rigid to withstand collapse in response to the weight of the object. The channeled covering layer encompasses the support and temperature regulation layers.

20 Claims, 7 Drawing Sheets

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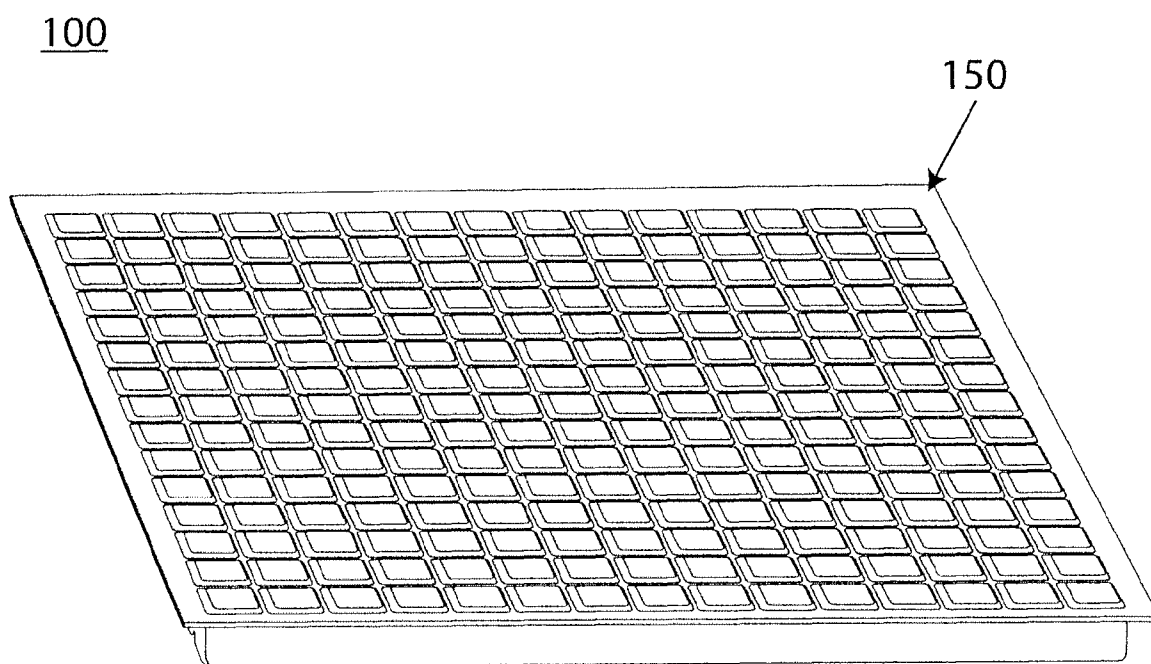


Fig. 1

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110

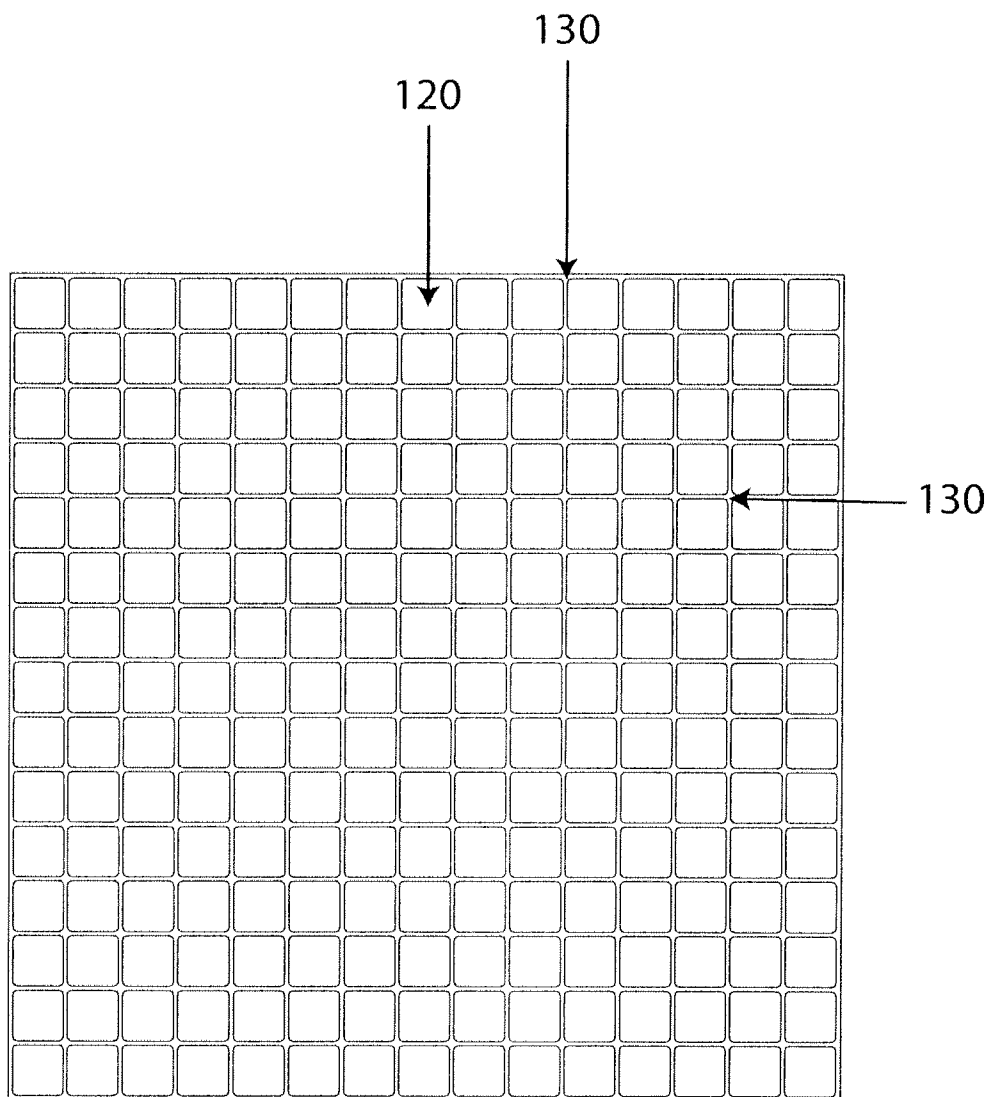


Fig. 2

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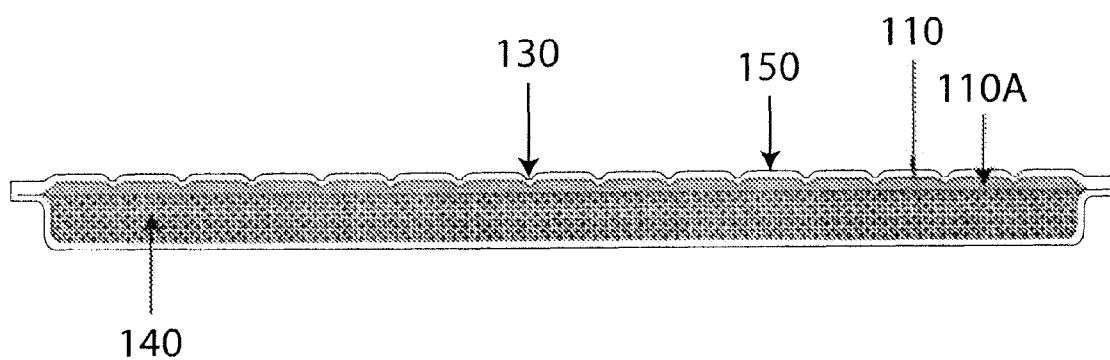


Fig. 3

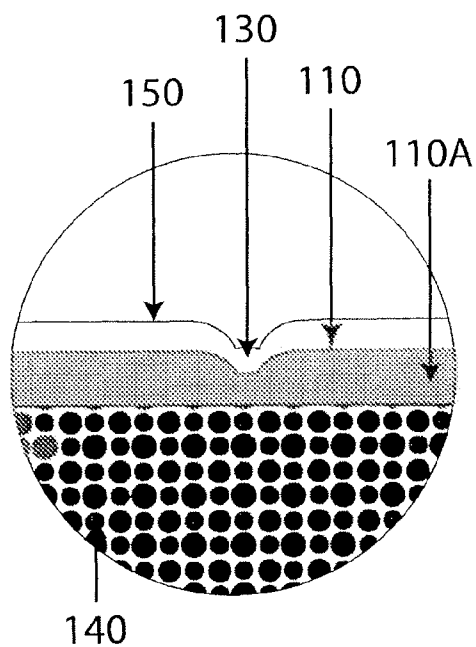


Fig. 4

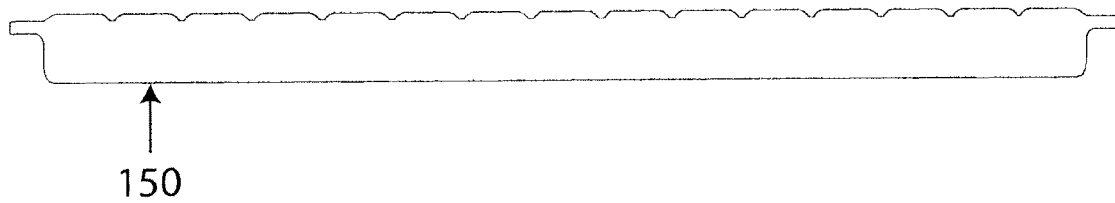


Fig. 5

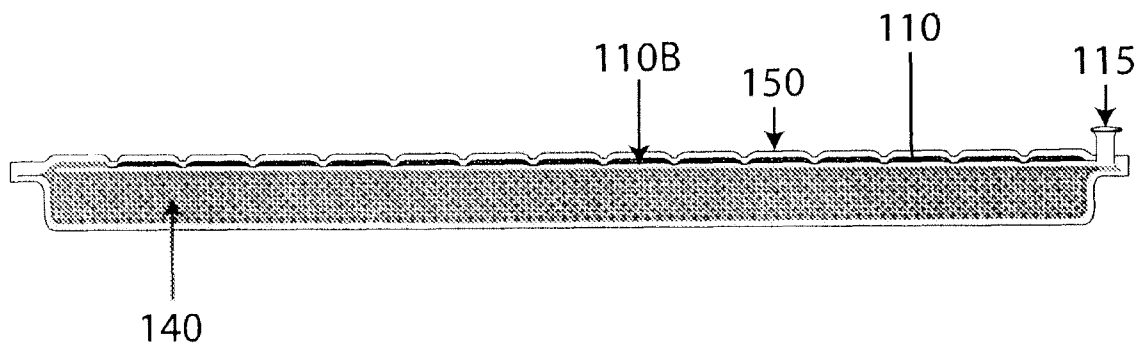


Fig. 6

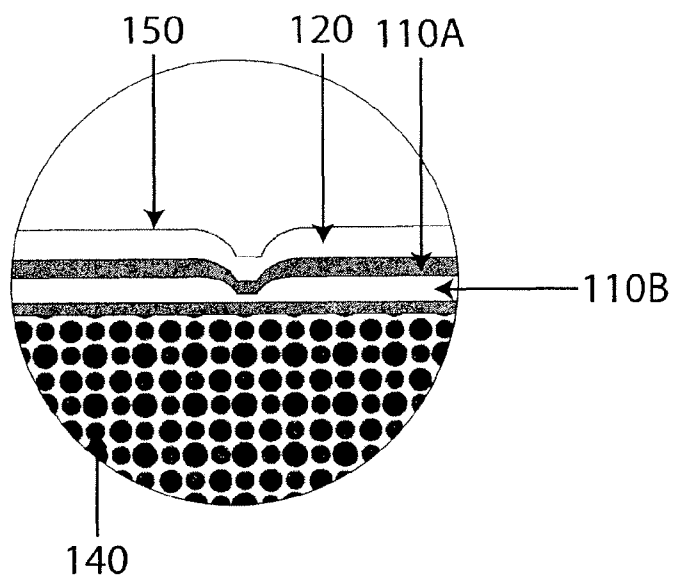


Fig. 7

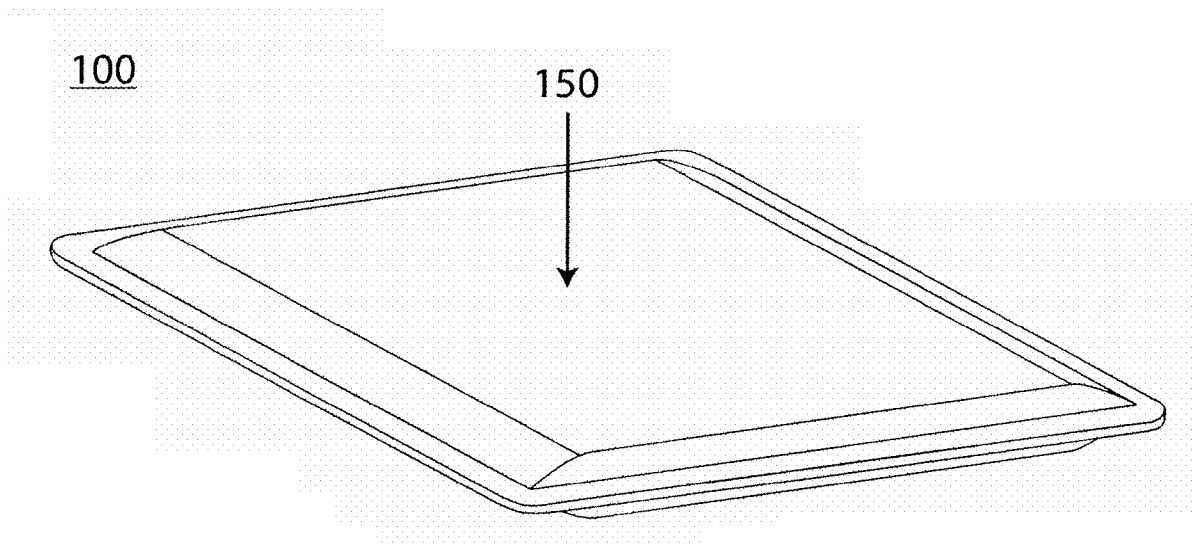


Fig. 8

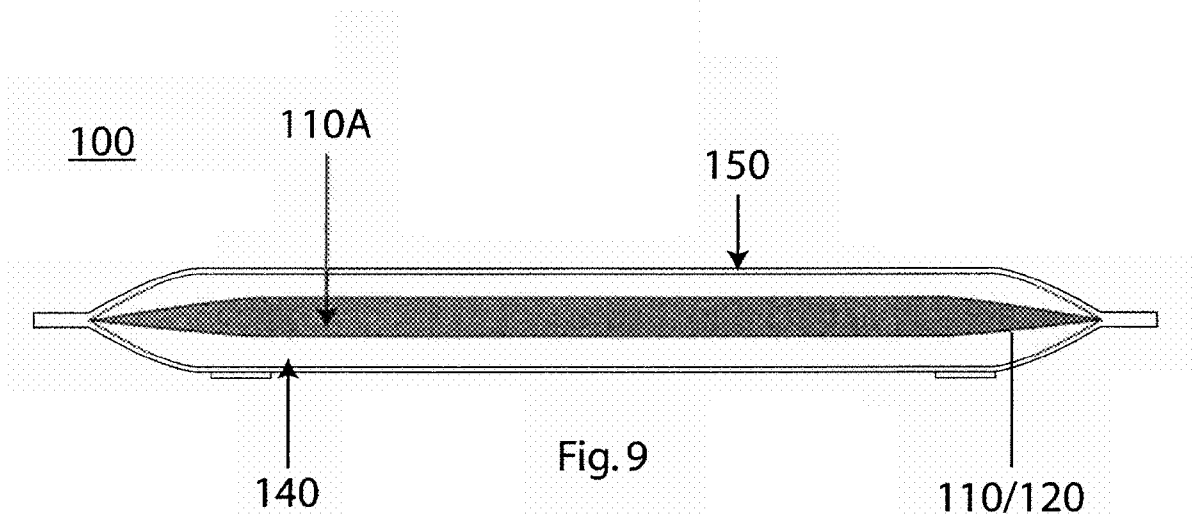
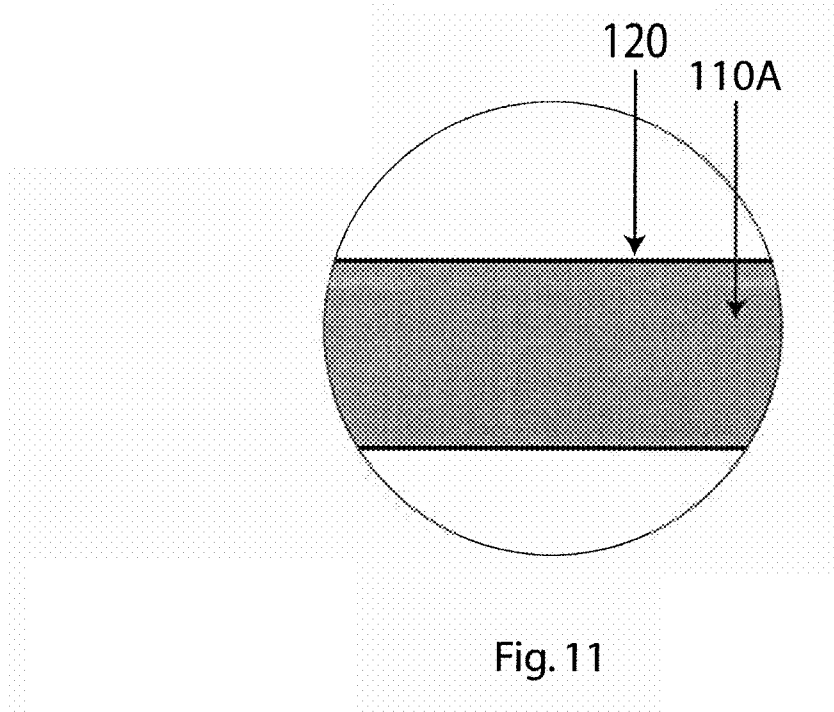
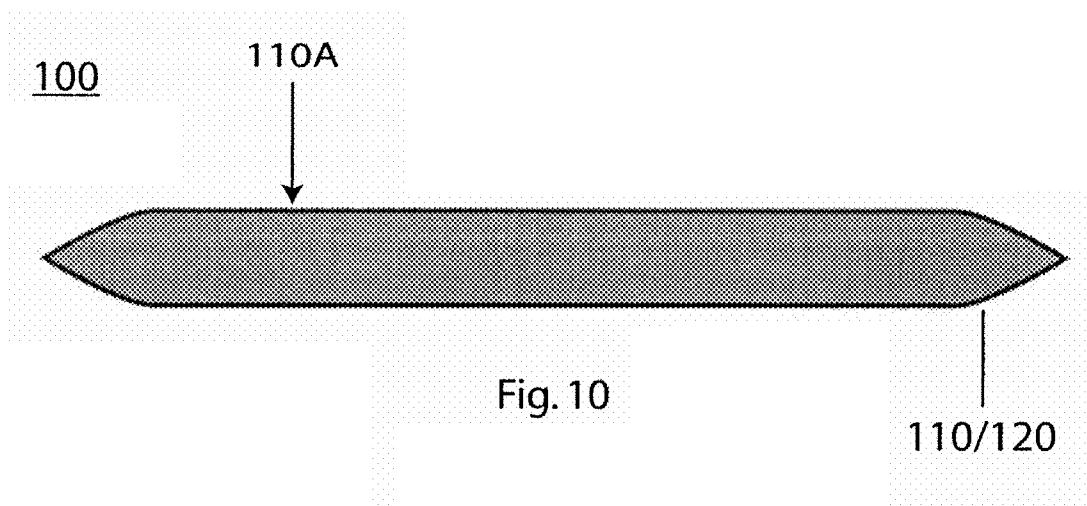


Fig. 9



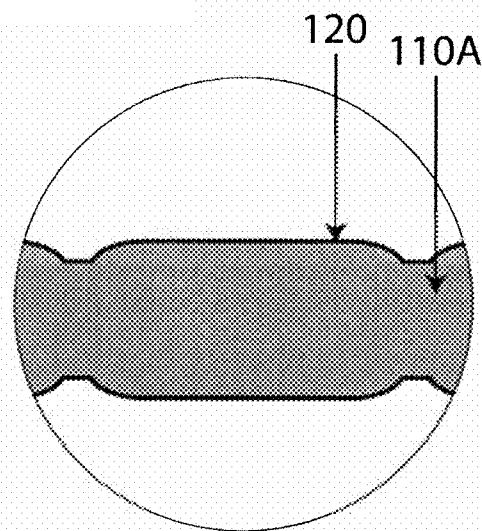
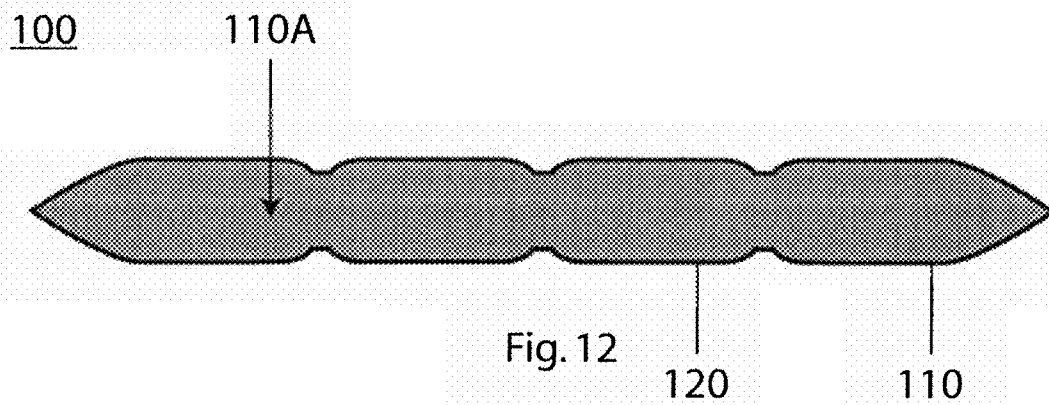


Fig. 13

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PRESSURE ACTIVATED RECHARGING COOLING PLATFORM

BACKGROUND

1) Field of the Invention

The invention relates to temperature controlled platforms, particularly, cooling platforms for animals.

2) Discussion of the Related Art

Pet beds serve as a place to rest or sleep, for pets such as cats and dogs. Many times, depending on the application, these pet beds are directed towards cooling or heating pets. These beds can be used during post-surgery recovery, dysplasia, or post-chemotherapy. Generally, these pet beds aid in the comfort and safety of the pet.

Many pet beds are known to have cooling mechanisms. Some pet beds provide a centralized cooling plate with no mechanism to circulate. These pet beds are electrically connected to a power source. Power sources often times fail, negating the “portable” aspect of a product. Further, such systems require heavy and complex equipment, and are not typically portable or user friendly.

There are other pet beds available which use alternative or “non-electric” means to cool a pet. These pet beds generally use ice packs. However, these ice packs eventually melt and need to be replaced. Accordingly, it is desirable to provide an improved cooling bed for pets.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described by way of example with reference to the accompanying drawings wherein:

FIG. 1 illustrates a top angled perspective of a cooling platform.

FIG. 2 illustrates a top view of a temperature regulation layer of the cooling platform.

FIG. 3 illustrates a cross-sectional view of the cooling platform.

FIG. 4 illustrates a detailed cross-sectional view of the cooling platform.

FIG. 5 illustrates a cross-sectional view of a channeled covering layer of the cooling platform.

FIG. 6 illustrates a detailed cross-sectional view of an alternative embodiment of the cooling platform.

FIG. 7 illustrates a detailed cross-sectional view of the alternative embodiment of the cooling platform.

FIG. 8 illustrates a top angled perspective of an alternative embodiment of the cooling platform.

FIG. 9 illustrates a cross-sectional perspective of the alternative embodiment of the cooling platform.

FIG. 10 illustrates a cross-sectional perspective of an alternative embodiment of the cooling platform.

FIG. 11 illustrates a detailed cross-sectional view of the alternative embodiment of the cooling platform.

FIG. 12 illustrates a cross-sectional perspective of an alternative embodiment of the cooling platform.

FIG. 13 illustrates a detailed cross-sectional view of the alternative embodiment of the cooling platform.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is now described with reference to figures where like reference numbers indicate identical or functionally similar elements. While specific configurations and arrangements are discussed, it should be understood that this is done for illustrative purposes only. A person skilled in

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the relevant art will recognize that other configurations and arrangements can be used without departing from the spirit and scope of the invention.

The invention described herein is multilayered. Each layer, in an embodiment, is bonded to the next layer in some fashion, in that, each layer is comprised of a first and a second side and is bonded to the respective side accordingly. As such, the term “bonded” refers to the joining, adhering, affixing, connecting, attaching, threading or the like, through chemical, mechanical or electrical avenues, of at least two elements of a cooling platform, such that the elements tend to be and remain bonded during normal use conditions of the cooling platform.

FIG. 1 illustrates a cooling platform 100. The cooling platform 100 is comprised of a temperature regulation layer 110 (illustrated in FIG. 2), a support layer 140 (illustrated in FIG. 3), and a channeled covering layer 150.

FIG. 2 illustrates the temperature regulation layer 110 in more detail. The temperature regulation layer 110 is adapted to hold a composition 110A (illustrated in FIG. 3) and provides temperature regulation to the cooling platform 100. The temperature regulation layer 110 has an angled segment 120, which includes a top side and a bottom side (illustrated FIG. 8 and FIG. 9). The angled segment 120 is formed by channels 130 and includes a sealed perimeter.

In an embodiment, and as illustrated in FIG. 2, the temperature regulation layer 110 includes a plurality of angled segments 120 formed by a plurality of channels 130. The channels 130 effectively space the top and bottom sides of each angled segment 120 at a predefined distance. In an embodiment, the predefined distance can equal zero, thus completely forming each angled segment 120 and cutting off any interconnection or communication therein.

In another embodiment, that predefined distance can be measured depending on the object using the cooling platform 100. In this embodiment, the predefined distance allows for interconnection between the angled segments 120 of the composition 110A (including pressure portions 110B as seen in FIG. 6 and FIG. 7). In this embodiment, the interconnection would apply to those angled segments 120 within the perimeter of the temperature regulation layer 110, as the perimeter is sealed.

The cooling platform 100 is adapted to provide cooling to a wide variety of objects. As used herein, the term “object” can mean a variety of things including but not limited to domestic animals, such as cats and dogs. The use of the cooling platform 100 can extend to human use in vehicles or similar circumstances calling for such regulation. Generally, the cooling platform 100 can be used for anything that needs or requires either heat, cool or temperature regulation.

FIG. 3 and FIG. 4 illustrate a cross-section of the cooling platform 100, which includes the support layer 140. The support layer 140 is substantially bonded to the bottom side of the temperature regulation layer 110. The support layer 140 comprised of material sufficiently pliable to deform and sufficiently rigid to withstand collapse in response to the weight of the object.

In an embodiment, the support layer 140 can be made from polyurethane foam, elastomer foam, memory foam, or other suitable material. In another embodiment, the support layer 140 is made of an orthopedic foam, of a consistency designed to protect joints and provide appropriate support to the skeletal system.

In an embodiment, the support layer 140 can include soft, pliable, and removable stuffing material to provide cushioning, allowing a user to establish the firmness or softness desired. Such material can include synthetic pillow stuffing such as polyester filling, or can include feathers such as goose

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or duck down. As a further embodiment, the support layer **140** can include a combination of dense foam and softer pillow stuffing. It is contemplated that different types of cushioning can be utilized for different types, sizes, and weight of objects.

FIG. **3** and FIG. **4** further illustrate the composition **110A** within the temperature regulation layer **110**. The composition **110A** serves to control the temperature of the cooling platform **100**. The cooling platform **100** can handle a range of different temperatures depending on the object in use. This can mean that the composition **110A** can encompass a variety of cooling and heating compounds.

In an embodiment, the composition **110A** can be activated by a wide variety of means, e.g. the addition of water. In this embodiment, the composition **110A** can include ammonium nitrate and distilled water.

In another embodiment, the composition **110A** can be activated by pressure, wherein the pressure of a object sitting on the cooling platform **100** activates the composition **110A**, triggering an endothermic process and subsequent cooling. Upon the release of that pressure, the composition **110A** undergoes a subsequent recharge, essentially the reverse of the initial reaction. The above is consistent with Le Chatelier's principle, in that, the reaction reverses upon the application or absence of pressure. In this embodiment, the composition **110A** is comprised of: thirty percent carboxymethyl cellulose; twenty percent water; thirty-five percent polyacrylamide; and at least fifteen percent alginic acid. The aforementioned composition **110A** also provides a cooling effect for an increased duration over other known compositions.

FIG. **5** illustrates a cross-section of the channeled covering layer **150**. The channeled covering layer **150** can encompass both the support **140** and temperature regulation layers **110**. The channeled covering layer **150** can comprise a piece of fabric or netting, which can include, but is not limited to, plastic, nylon or cloth netting, or a micro-fiber material with a waterproof layer.

The fabric or netting can allow circulated air to penetrate and escape to the surface, effectuating the cooling process. The fabric or netting can be air tight or resistant to air penetration, to provide indirect cooling. In another embodiment, the channeled covering layer **150** can be made of a firm material, such as plastic, which retains its shape when sat upon by an object. Additionally, the channeled covering layer **150** can include padding to provide a comfortable seating surface.

In an embodiment, the channeled covering layer **150** can be easily removed via a bottom and/or zipper or any other similar means attached thereto. The channeled covering layer **150** can be made of material such that it can be easily replaced with a different top portion made of another material (and/or having different thickness) as desired. Further, in an embodiment, the channeled covering layer **150** can contain antibacterial, stain resistant, chew resistant, and/or anti flea materials.

FIG. **6** and FIG. **7** illustrate an alternative embodiment of the invention. In this embodiment, the temperature regulation layer **110** includes a pressure portion **110B**. The pressure portion **110B** allows for the ability to increase or decrease the firmness of the temperature regulation layer **110** and thus the cooling platform **100** by the addition of gases such as oxygen. This feature can be predetermined or varied as set forth below.

In an embodiment, the pressure portion **110B** can include a means for inflating or deflating **115** the pressure portion **110B** and the temperature regulation layer **110**. The means for inflating and deflating **115** can include a variety of structures designed for air intake and out take. Often, the structures

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involved in such means include a protruding valve stem and a cap. The valve stem can be connected or coupled with a threaded portion for attachment to a mechanical or electrical pump, or can be comprised of a plastic valve allowing for human pressure inflation.

In an embodiment, the means for inflating or deflating can interconnect the pressure portions **110B** held within the plurality of angled segments **120**. In another embodiment, each pressure portion **110B** can be provided for individually within each angled segment **120** at either a fixed pressure or established using the above mentioned interconnected means.

FIG. **8** and FIG. **9** illustrate an alternative embodiment of the invention. In this embodiment, the temperature regulation layer **110** is adapted to hold a composition **110A** in a single angled segment **120**. Therefore, the temperature regulation layer **110** becomes the single angled segment **120**. The perimeter of the angled segment **120**, which includes a top side and a bottom side, is sealed preventing the composition **110A** from leaking.

FIGS. **10** and **11** illustrate another alternative embodiment of the invention. In this particular embodiment, the temperature regulation layer **110/120** is adapted to hold the composition **110A**. In this embodiment, the temperature regulation layer **110/120** has an angled segment **120** formed as described herein. However, this embodiment does not include the channeled covering layer **150** as well as support layer **140**.

FIGS. **12** and **13** illustrate another embodiment of the invention. In this embodiment, the temperature regulation layer **110** adapted to hold the composition **110A**, has a plurality of angled segments **120**. And as already described herein, the angled segments **120** are formed by a top side and a bottom side at a predefined distance, and by channels **130**. In an embodiment, the channels **130** may completely segment the plurality of angled segments **120**.

As mentioned in conjunction with the channeled covering layer **150**, the temperature regulation layer **110** may be comprised of similar materials making up the channeled covering layer **150**. The temperature regulation layer **110**, in an embodiment, may also be plastic or of similar material, and in another embodiment be such that the composition **110A** is viewable through clear material.

In use, the cooling platform **100** is able to regulate the temperate of an object. The object contacts the channeled covering layer **150** exerting pressure over the cooling platform **100**. The support layer **140** is designed to be sufficiently pliable to deform and sufficiently rigid to withstand collapse in response to the weight of the object. As stated herein, the support layer **140** can be comprised of a wide variety of components.

Depending on the composition **110A** used, the temperature regulation layer **110** transfers heat from the object. In further effectuating heat transfer, the channels **130** have at least two advantages. First, the channels **130** are designed to mix air with the cooling process between the object and the channeled covering layer **150**. Second, the channels **130** substantially prevent or minimize the composition **110A** from being pushed out of the angled segment **120**. Obviously, in other embodiments presented herein, the angled segments **120** can be completely segmented, fully preventing such an issue. The channeled covering layer **150** also aids in effectuating heat transfer from the object by its composition of channels. Of course, the degree of such aid depends in large part on the type of material used with the cooling platform **100**.

In adjusting to accommodate the object, the pressure portions **110B** are used. As stated above, the pressure portions **110B** can be individual and predetermined or variable and interconnected. Thus, the interconnected pressure portions

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110B can be varied through the means for inflating and deflating 115. Also, as stated herein, the channeled covering layer 150 can provide a degree of comfort and firmness depending on the material used, lending to the overall versatility of the cooling platform 100.

The invention contains a large amount of advantages. An advantage of the invention is the composition 110A. The composition 110A is able to be re-used without the need for electricity, refrigeration, additional treatments, or extraneous equipment. The advantage stems from the components within the composition 110A, which effectively keep a temperature of 3-4 degrees Fahrenheit lower than body temperature. This particular composition 110A is able to recharge after the alleviation of pressure (after the object moves). This particular advantage further allows for low-cost and eco-friendly solutions to temperature regulating and aids in the “mobility” aspect of the invention by not requiring input from other sources and by virtue of being a non-toxic substance.

Another advantage of the invention is the unique design. The design enhances and optimizes the cooling performance. The channels 130 allow for a mixture of air flow between the object and the cooling platform 100, effectively cooling the object at a quicker rate. Furthermore, the presence of the predefined distance from the top and bottom of the angled segment 120, essentially prevents the dispersion of the composition 110A from the pressure the object exerts on the cooling platform 100. The overall effect increases the rate of cooling on the targeted object.

Another advantage of the invention is the interconnected pressure portions 110B. The pressure portions 110B provide the ability to increase or decrease the overall pressure of the cooling platform 100. This feature is particularly advantageous given the large variation in object weight.

While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely illustrative and not restrictive of the current invention, and that this invention is not restricted to the specific constructions and arrangements shown and described since modification can occur to those ordinarily skilled in the art.

What is claimed:

1. A cooling platform for cooling an object, the platform comprising:

a temperature regulation layer, the temperature regulation layer having a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance less than the predefined distance;

a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively;

a support layer substantially bonded to the bottom side of the temperature regulation layer, the support layer comprised of an elastic material capable of deforming and withstanding collapse; and

a channeled covering layer encompassing the support and temperature regulation layers.

2. The cooling platform of claim 1 wherein the plurality of angled segments include a pressure portion.

3. The cooling platform of claim 2 wherein the pressure portions are interconnected.

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4. The cooling platform of claim 3 wherein the pressure portions include a means for inflating and deflating.

5. The cooling platform of claim 4 wherein the pressure activated recharging cooling composition is comprised of:

thirty percent carboxymethyl cellulose;
twenty percent water;
thirty-five percent polyacrylamide; and
fifteen percent alginic acid.

6. The cooling platform of claim 1 wherein the support layer is comprised of memory foam.

7. The cooling platform of claim 1 wherein the channeled covering layer comprises a piece of fabric or net covering.

8. The cooling platform of claim 1 wherein the angled segments within the sealed perimeter are sealed.

9. A cooling platform for cooling an object, the platform comprising:

a temperature regulation layer, the temperature regulation layer having an angled segment formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels form sides by contacting the top side with the bottom side;

a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively;

a support layer substantially bonded to the bottom side of the temperature regulation layer, the support layer comprised of an elastic material capable of deforming and withstanding collapse; and

a channeled covering layer encompassing the support and temperature regulation layers.

10. The cooling platform of claim 9 wherein the pressure activated recharging cooling composition is comprised of:

thirty percent carboxymethyl cellulose;
twenty percent water;
thirty-five percent polyacrylamide; and
fifteen percent alginic acid.

11. The cooling platform of claim 9 wherein the temperature regulation layer includes a pressure portion within the angled segment.

12. The cooling platform of claim 11 wherein the pressure portion include a means for inflating and deflating.

13. A cooling platform for cooling an object, the platform comprising:

a temperature regulation layer, the temperature regulation layer having an angled segment formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels form sides by contacting the top side with the bottom side; and

a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively, wherein the composition is within the temperature regulation layer comprised of thirty percent carboxymethyl cellulose; twenty percent water; thirty-five percent polyacrylamide; and fifteen percent alginic acid.

14. A cooling platform for cooling an object, the platform comprising:

a temperature regulation layer, the temperature regulation layer having a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by con-

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tacting the top side with the bottom side at a distance lesser than the predefined distance; and
 a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively, wherein the composition is within the temperature regulation layer comprised of thirty percent carboxmethyl cellulose; twenty percent water; thirty-five percent polyacrylamide; and fifteen percent alginic acid.

15. A cooling platform for cooling an object, the platform comprising:
 a temperature regulation layer, the temperature regulation layer having an angled segment formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels form sides by contacting the top side with the bottom side; and
 a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively.

16. A cooling platform for cooling an object, the platform comprising:
 a temperature regulation layer, the temperature regulation layer having a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance lesser than the predefined distance; and
 a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively.

17. A cooling platform for cooling an object, the platform comprising:
 a temperature regulation layer, the temperature regulation layer having a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance lesser than the predefined distance;
 a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively, the pressure activated recharging cooling composition comprised of water and polyacrylamide;
 a support layer substantially bonded to the bottom side of the temperature regulation layer, the support layer comprised of an elastic material capable of deforming and withstanding collapse; and

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a channeled covering layer encompassing the support and temperature regulation layers.

18. A cooling platform for cooling an object, the platform comprising:
 a temperature regulation layer, the temperature regulation layer having an angled segment formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels form sides by contacting the top side with the bottom side; and
 a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively, the pressure activated recharging cooling composition comprised of water and polyacrylamide.

19. A cooling platform for cooling an object, the platform comprising:
 a temperature regulation layer, the temperature regulation layer having a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance lesser than the predefined distance; and
 a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively, the pressure activated recharging cooling composition comprised of water and polyacrylamide.

20. A method of manufacturing a cooling platform for cooling an object, the method comprising the steps of:
 providing a temperature regulation layer, the temperature regulation layer having a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance lesser than the predefined distance;
 providing a pressure activated recharging cooling composition within the temperature regulation layer, the pressure activated recharging cooling composition endothermically activated and endothermically deactivated upon the application and release of pressure, respectively;
 providing a support layer substantially bonded to the bottom side of the temperature regulation layer, the support layer comprised of an elastic material capable of deforming and withstanding collapse; and
 providing a channeled covering layer encompassing the support and temperature regulation layers.

* * * * *

EXHIBIT 2



US011375685B1

(12) **United States Patent**
Prendergast

(10) **Patent No.:** **US 11,375,685 B1**
(45) **Date of Patent:** ***Jul. 5, 2022**

(54) **PRESSURE ACTIVATED RECHARGING COOLING PLATFORM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **17/687,121**

(22) Filed: **Mar. 4, 2022**

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(63) Continuation of application No. 17/540,395, filed on Dec. 2, 2021, which is a continuation of application (Continued)

(51) **Int. Cl.**
F25D 3/02 (2006.01)
A01K 1/015 (2006.01)
A01K 1/035 (2006.01)

(52) **U.S. Cl.**
CPC **A01K 1/0158** (2013.01); **A01K 1/0353** (2013.01); **F25D 3/02** (2013.01); **F25D 2303/08** (2013.01); **F25D 2303/085** (2013.01)

(58) **Field of Classification Search**
CPC A01K 1/0158; A01K 1/0353; F25D 3/02; F25D 2303/08; F25D 2303/085
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,208,877 A 9/1965 Merry
4,064,835 A 12/1977 Rabenbauer
(Continued)

FOREIGN PATENT DOCUMENTS

CN 1493644 A 5/2004
CN 101305877 A 11/2008
(Continued)

OTHER PUBLICATIONS

Inside Technogel—discover life made comfortable, 6 pages, <https://us.technogelworld.com/the-gel/> [Oct. 7, 2020 3:16:06 PM].

(Continued)

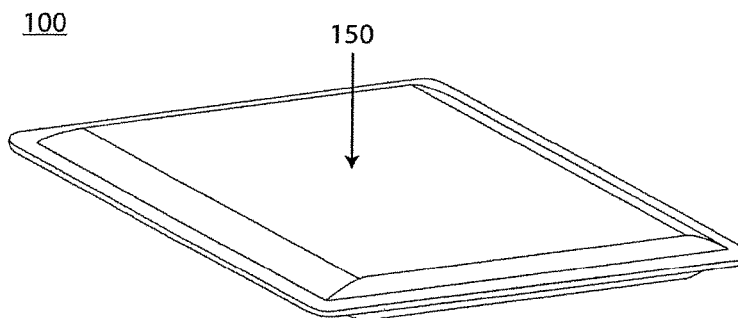
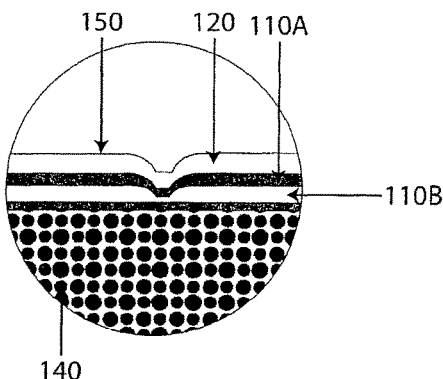
Primary Examiner — Filip Zec

(74) *Attorney, Agent, or Firm* — Carlson, Gaskey & Olds, P.C.

(57) **ABSTRACT**

A pressure activated recharging cooling platform for cooling an object is provided. The cooling platform comprises a temperature regulation layer, a support layer, and a channeled covering layer. The temperature regulation layer is adapted to hold a composition. The temperature regulation layer has a plurality of angled segments, wherein angled segments within a sealed perimeter of the temperature regulation layer are formed by a top side and a bottom side at a predefined distance, and channels, wherein the channels substantially form sides by contacting the top side with the bottom side at a distance lesser than the predefined distance. The support layer is substantially bonded to the bottom side of the temperature regulation layer and is comprised of material sufficiently pliable to deform and sufficiently rigid to withstand collapse in response to the weight of the object. The channeled covering layer encompasses the support and temperature regulation layers.

20 Claims, 7 Drawing Sheets



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Related U.S. Application Data

No. 15/850,700, filed on Dec. 21, 2017, now Pat. No. 11,219,191, which is a continuation of application No. 14/695,909, filed on Apr. 24, 2015, now abandoned, which is a continuation of application No. 14/226,393, filed on Mar. 26, 2014, now Pat. No. 9,226,474, which is a continuation of application No. 12/760,045, filed on Apr. 14, 2010, now Pat. No. 8,720,218.

(58) **Field of Classification Search**

USPC 62/457.1–457.7, 529, 259.3
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,242,104 A * 12/1980 Frost C10K 3/04
48/197 R
4,422,194 A 12/1983 Viesturs et al.
5,261,241 A 11/1993 Kitahara et al.
5,421,859 A * 6/1995 Wienert C22B 1/245
75/766
5,628,205 A * 5/1997 Rockenfeller C09K 5/047
62/480
5,632,051 A 5/1997 Stanley et al.
5,755,110 A 5/1998 Silvas
6,128,795 A 10/2000 Stanley et al.
6,132,455 A 10/2000 Shang
6,210,427 B1 4/2001 Augustine et al.
6,226,820 B1 5/2001 Navarro
6,482,332 B1 11/2002 Malach
6,677,026 B1 1/2004 Yates
6,708,646 B1 * 3/2004 Wang A01K 1/0158
119/28.5
6,855,410 B2 2/2005 Buckley
7,036,162 B1 5/2006 Gatten
7,324,340 B2 1/2008 Xiong
7,358,282 B2 4/2008 Krueger et al.
7,780,713 B2 8/2010 Roberts
8,381,495 B2 2/2013 Fan et al.
8,720,218 B2 * 5/2014 Prendergast A01K 1/0353
62/529

2005/0288749 A1 12/2005 Lachenbruch
2006/0272581 A1 12/2006 Dunn et al.
2007/0061978 A1 3/2007 Losio
2007/0246157 A1 10/2007 Mason et al.
2008/0053109 A1 3/2008 Quincy et al.
2009/0088825 A1 4/2009 Ota
2009/0132013 A1 5/2009 Amalfi
2010/0009128 A1 1/2010 Fan et al.
2010/0280582 A1 11/2010 Baker et al.
2011/0139406 A1 6/2011 Rizzo

FOREIGN PATENT DOCUMENTS

CN 201452402 U 5/2010
JP 2002233442 A 8/2002
JP 3088754 U 9/2002
JP 3115093 U 11/2005
KR 20060097360 A 9/2006
KR 100945294 B1 3/2010
WO 2009060876 A1 5/2009

OTHER PUBLICATIONS

Maze's LPR 2 3 initial non-infringement and invalidity contentions; US District Court Northern District of Illinois Eastern Division, case No. 1:15-cv-01138; filed Jun. 24, 2015.
Maze's Petition for Inter Partes Review of U.S. Pat. No. 8,720,218; United States Patent and Trademark Office in the United States Patent Trial and Appeal Board, IPR2016-00117, filed Oct. 30, 2015.
The Green Pet Shop Enterprises LLC v Comfort Revolution, LLC, In the United States District Court for the District of New Jersey, Civil Action No. 3:20-cv-02130, Appendix A to Defendants/Counterclaimant's Initial Invalidity Contentions.
The Green Pet Shop Enterprises LLC v Comfort Revolution, LLC, In the United States District Court for the District of New Jersey, Civil Action No. 3:20-cv-02130, Appendix B to Defendants/Counterclaimant's Initial Invalidity Contentions.
The Green Pet Shop Enterprises LLC v Comfort Revolution, LLC, In the United States District Court for the District of New Jersey, Civil Action No. 3:20-cv-02130, Comfort Revolution, LLC's Invalidity Contentions.
Wikipedia. Le Chatelier's principle. https://en.wikipedia.org/wiki/Le_Chatelier%27s_principle#Effect_of_change_in_pressure.

* cited by examiner

U.S. Patent

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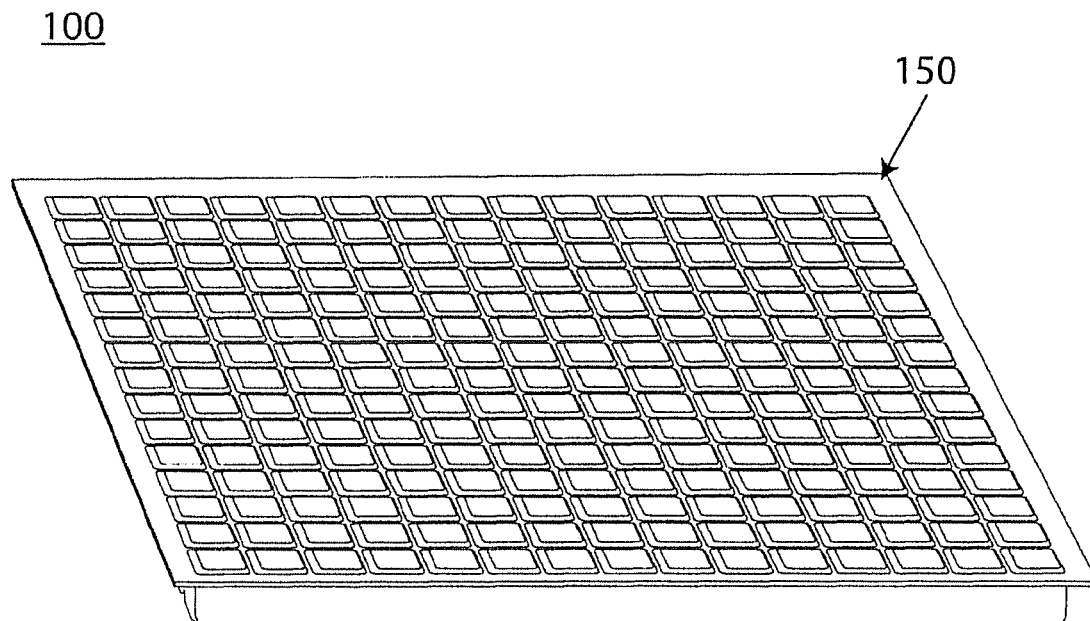


Fig. 1

110

130

120

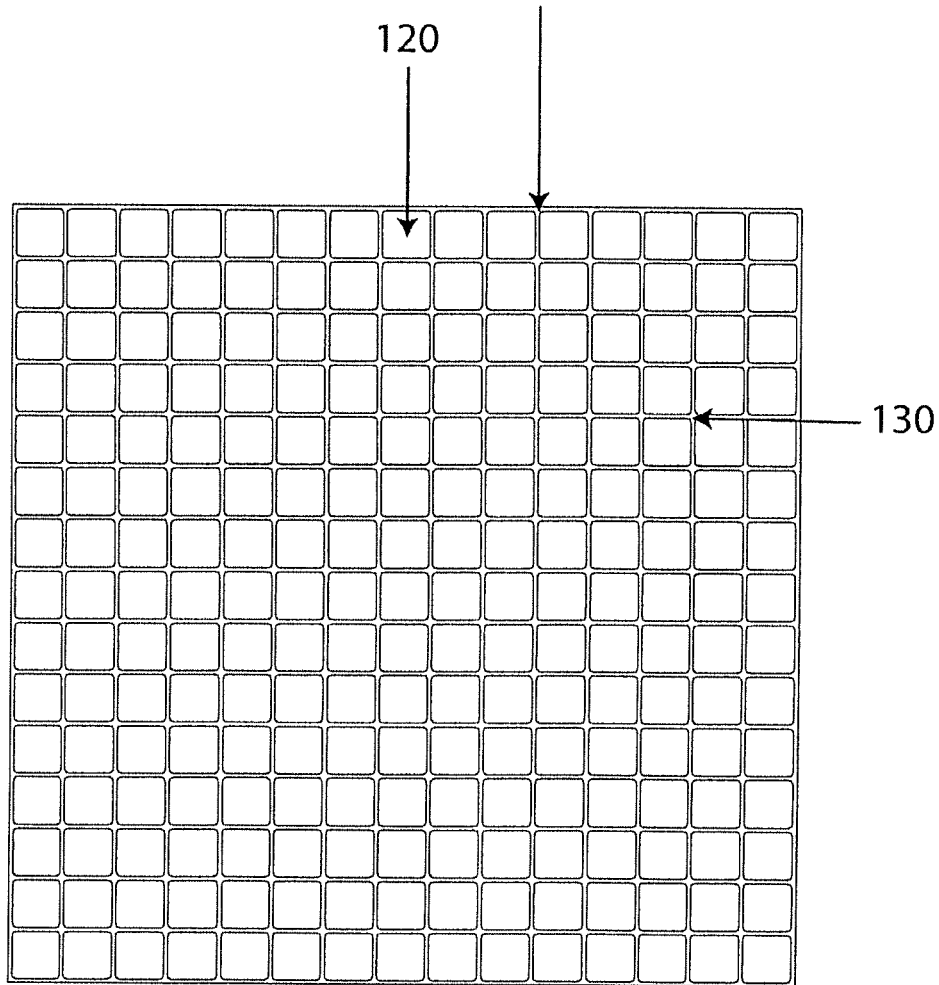


Fig. 2

100

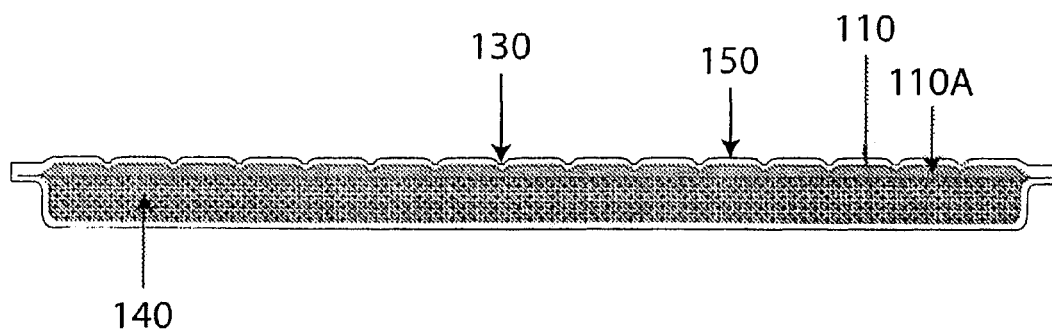


Fig. 3

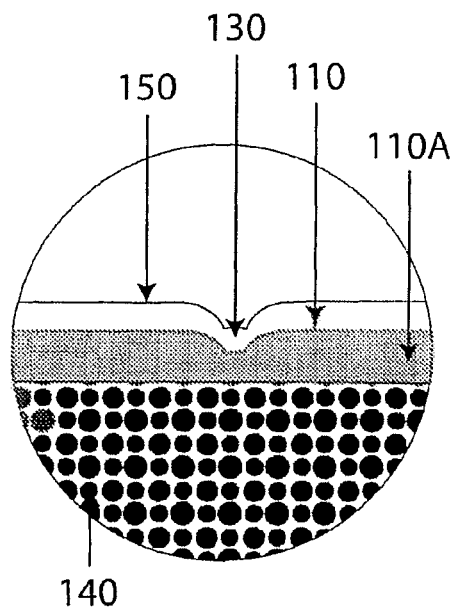


Fig. 4

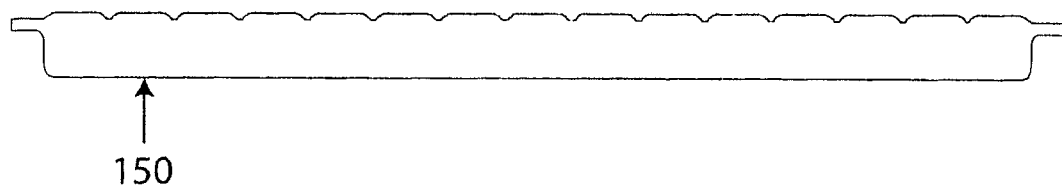


Fig. 5

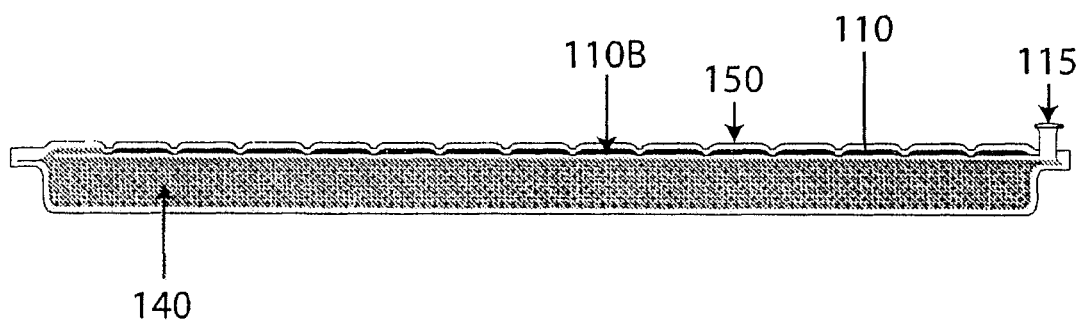


Fig. 6

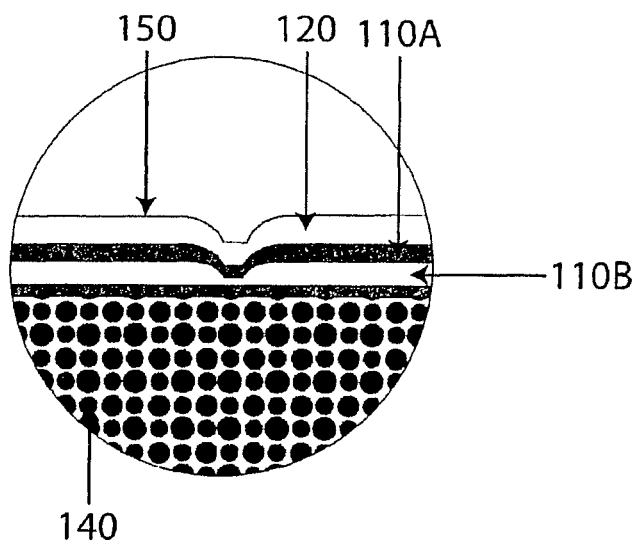


Fig. 7

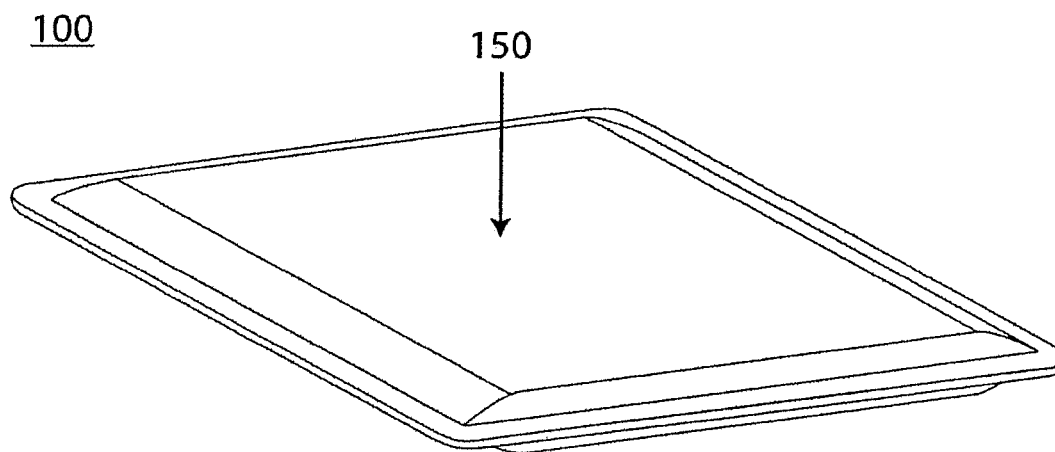


Fig. 8

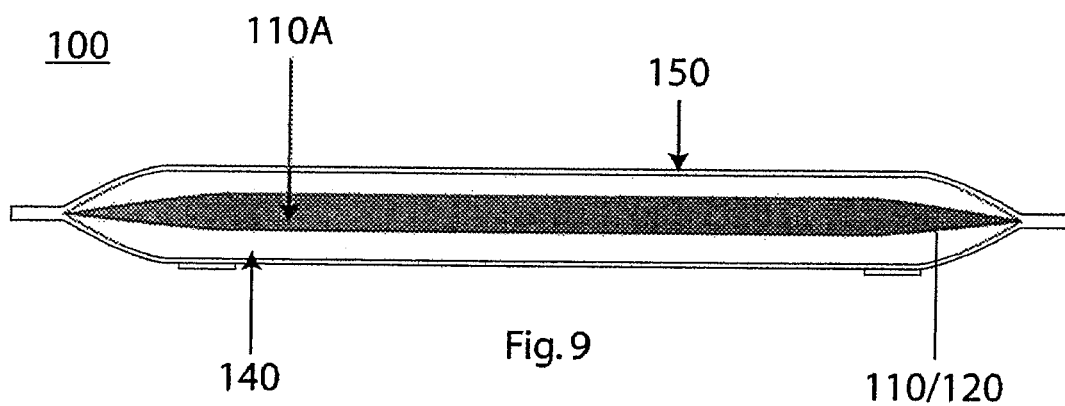
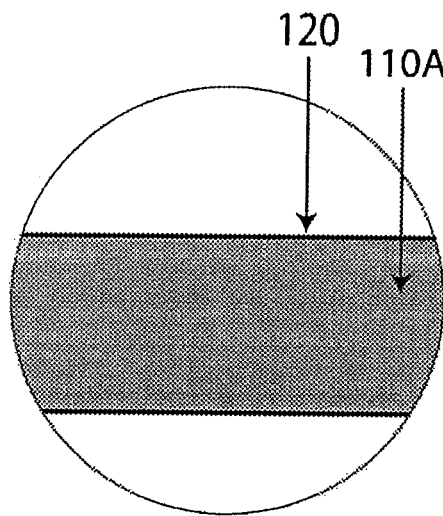
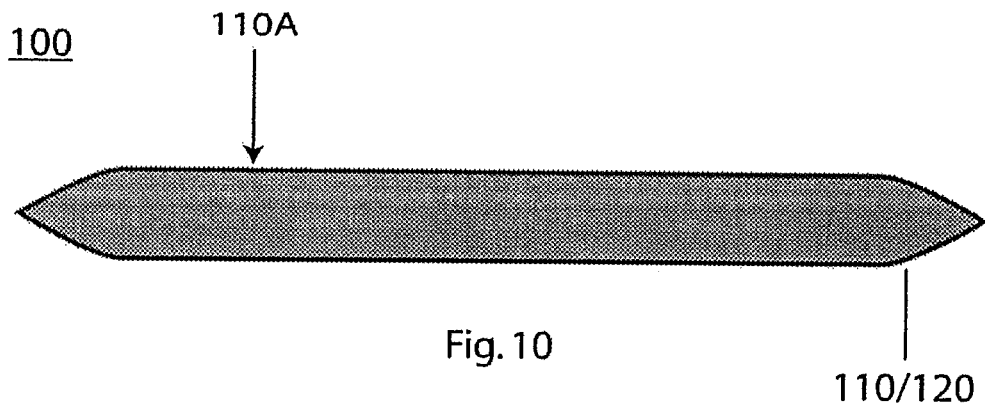


Fig. 9



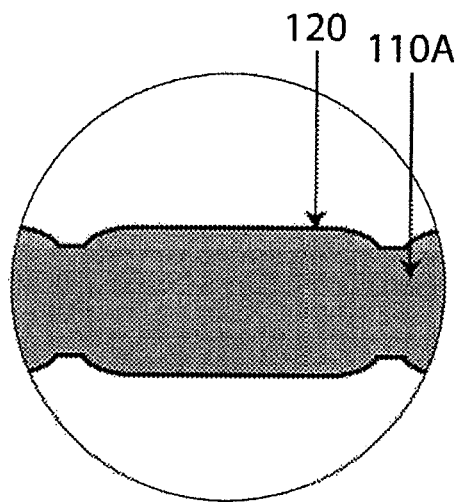
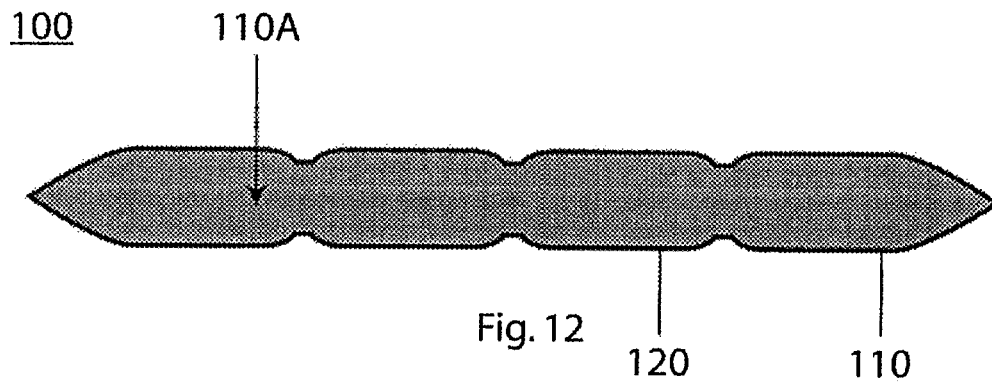


Fig. 13

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**PRESSURE ACTIVATED RECHARGING
COOLING PLATFORM****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This is a continuation of U.S. application Ser. No. 17/540,395, filed Dec. 2, 2021, which is a continuation of U.S. application Ser. No. 15/850,700, filed on Dec. 21, 2017, now U.S. Pat. No. 11,219,191, which is a continuation of U.S. application Ser. No. 14/695,909, filed on Apr. 24, 2015, which is a continuation of U.S. application Ser. No. 14/226,393, filed on Mar. 26, 2014, now U.S. Pat. No. 9,226,474, which is a continuation of U.S. application Ser. No. 12/760,045, filed on Apr. 14, 2010, now U.S. Pat. No. 8,720,218. The contents of all related applications are incorporated by reference in their entirety herein.

BACKGROUND**1. Field of the Invention**

The invention relates to temperature controlled platforms, particularly, cooling platforms for animals.

2. Discussion of the Related Art

Pet beds serve as a place to rest or sleep, for pets such as cats and dogs. Many times, depending on the application, these pet beds are directed towards cooling or heating pets. These beds can be used during post-surgery recovery, dysplasia, or post-chemotherapy. Generally, these pet beds aid in the comfort and safety of the pet.

Many pet beds are known to have cooling mechanisms. Some pet beds provide a centralized cooling plate with no mechanism to circulate. These pet beds are electrically connected to a power source. Power sources often times fail, negating the “portable” aspect of a product. Further, such systems require heavy and complex equipment, and are not typically portable or user friendly.

There are other pet beds available which use alternative or “non-electric” means to cool a pet. These pet beds generally use ice packs. However, these ice packs eventually melt and need to be replaced. Accordingly, it is desirable to provide an improved cooling bed for pets.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described by way of example with reference to the accompanying drawings wherein:

FIG. 1 illustrates a top angled perspective of a cooling platform.

FIG. 2 illustrates a top view of a temperature regulation layer of the cooling platform.

FIG. 3 illustrates a cross-sectional view of the cooling platform.

FIG. 4 illustrates a detailed cross-sectional view of the cooling platform.

FIG. 5 illustrates a cross-sectional view of a channeled covering layer of the cooling platform.

FIG. 6 illustrates a detailed cross-sectional view of an alternative embodiment of the cooling platform.

FIG. 7 illustrates a detailed cross-sectional view of the alternative embodiment of the cooling platform.

FIG. 8 illustrates a top angled perspective of an alternative embodiment of the cooling platform.

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FIG. 9 illustrates a cross-sectional perspective of the alternative embodiment of the cooling platform.

FIG. 10 illustrates a cross-sectional perspective of an alternative embodiment of the cooling platform.

FIG. 11 illustrates a detailed cross-sectional view of the alternative embodiment of the cooling platform.

FIG. 12 illustrates a cross-sectional perspective of an alternative embodiment of the cooling platform.

FIG. 13 illustrates a detailed cross-sectional view of the alternative embodiment of the cooling platform.

DETAILED DESCRIPTION

The present invention is now described with reference to figures where like reference numbers indicate identical or functionally similar elements. While specific configurations and arrangements are discussed, it should be understood that this is done for illustrative purposes only. A person skilled in the relevant art will recognize that other configurations and arrangements can be used without departing from the spirit and scope of the invention.

The invention described herein is multilayered. Each layer, in an embodiment, is bonded to the next layer in some fashion, in that, each layer is comprised of a first and a second side and is bonded to the respective side accordingly. As such, the term “bonded” refers to the joining, adhering, affixing, connecting, attaching, threading or the like, through chemical, mechanical or electrical avenues, of at least two elements of a cooling platform, such that the elements tend to be and remain bonded during normal use conditions of the cooling platform.

FIG. 1 illustrates a cooling platform 100. The cooling platform 100 is comprised of a temperature regulation layer 110 (illustrated in FIG. 2), a support layer 140 (illustrated in FIG. 3), and a channeled covering layer 150.

FIG. 2 illustrates the temperature regulation layer 110 in more detail. The temperature regulation layer 110 is adapted to hold a composition 110A (illustrated in FIG. 3) and provides temperature regulation to the cooling platform 100. The temperature regulation layer 110 has an angled segment 120, which includes a top side and a bottom side (illustrated FIG. 8 and FIG. 9). The angled segment 120 is formed by channels 130 and includes a sealed perimeter.

In an embodiment, and as illustrated in FIG. 2, the temperature regulation layer 110 includes a plurality of angled segments 120 formed by a plurality of channels 130. The channels 130 effectively space the top and bottom sides of each angled segment 120 at a predefined distance. In an embodiment, the predefined distance can equal zero, thus completely forming each angled segment 120 and cutting off any interconnection or communication therein.

In another embodiment, that predefined distance can be measured depending on the object using the cooling platform 100. In this embodiment, the predefined distance allows for interconnection between the angled segments 120 of the composition 110A (including pressure portions 110B as seen in FIG. 6 and FIG. 7). In this embodiment, the interconnection would apply to those angled segments 120 within the perimeter of the temperature regulation layer 110, as the perimeter is sealed.

The cooling platform 100 is adapted to provide cooling to a wide variety of objects. As used herein, the term “object” can mean a variety of things including but not limited to domestic animals, such as cats and dogs. The use of the cooling platform 100 can extend to human use in vehicles or similar circumstances calling for such regulation. Generally,

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the cooling platform **100** can be used for anything that needs or requires either heat, cool or temperature regulation.

FIG. 3 and FIG. 4 illustrate a cross-section of the cooling platform **100**, which includes the support layer **140**. The support layer **140** is substantially bonded to the bottom side of the temperature regulation layer **110**. The support layer **140** comprised of material sufficiently pliable to deform and sufficiently rigid to withstand collapse in response to the weight of the object.

In an embodiment, the support layer **140** can be made from polyurethane foam, elastomer foam, memory foam, or other suitable material. In another embodiment, the support layer **140** is made of an orthopedic foam, of a consistency designed to protect joints and provide appropriate support to the skeletal system.

In an embodiment, the support layer **140** can include soft, pliable, and removable stuffing material to provide cushioning, allowing a user to establish the firmness or softness desired. Such material can include synthetic pillow stuffing such as polyester filling, or can include feathers such as goose or duck down. As a further embodiment, the support layer **140** can include a combination of dense foam and softer pillow stuffing. It is contemplated that different types of cushioning can be utilized for different types, sizes, and weight of objects.

FIG. 3 and FIG. 4 further illustrate the composition **110A** within the temperature regulation layer **110**. The composition **110A** serves to control the temperature of the cooling platform **100**. The cooling platform **100** can handle a range of different temperatures depending on the object in use. This can mean that the composition **110A** can encompass a variety of cooling and heating compounds.

In an embodiment, the composition **110A** can be activated by a wide variety of means, e.g., the addition of water. In this embodiment, the composition **110A** can include ammonium nitrate and distilled water.

In another embodiment, the composition **110A** can be activated by pressure, wherein the pressure of an object sitting on the cooling platform **100** activates the composition **110A**, triggering an endothermic process and subsequent cooling. Upon the release of that pressure, the composition **110A** undergoes a subsequent recharge, essentially the reverse of the initial reaction. The above is consistent with Le Chatelier's principle, in that, the reaction reverses upon the application or absence of pressure. In this embodiment, the composition **110A** is comprised of: thirty percent carboxymethyl cellulose; twenty percent water; thirty-five percent polyacrylamide; and at least fifteen percent alginic acid. The aforementioned composition **110A** also provides a cooling effect for an increased duration over other known compositions.

FIG. 5 illustrates a cross-section of the channeled covering layer **150**. The channeled covering layer **150** can encompass both the support **140** and temperature regulation layers **110**. The channeled covering layer **150** can comprise a piece of fabric or netting, which can include, but is not limited to, plastic, nylon or cloth netting, or a micro-fiber material with a waterproof layer.

The fabric or netting can allow circulated air to penetrate and escape to the surface, effectuating the cooling process. The fabric or netting can be air tight or resistant to air penetration, to provide indirect cooling. In another embodiment, the channeled covering layer **150** can be made of a firm material, such as plastic, which retains its shape when sat upon by an object. Additionally, the channeled covering layer **150** can include padding to provide a comfortable seating surface.

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In an embodiment, the channeled covering layer **150** can be easily removed via a bottom and/or zipper or any other similar means attached thereto. The channeled covering layer **150** can be made of material such that it can be easily replaced with a different top portion made of another material (and/or having different thickness) as desired. Further, in an embodiment, the channeled covering layer **150** can contain antibacterial, stain resistant, chew resistant, and/or anti flea materials.

FIG. 6 and FIG. 7 illustrate an alternative embodiment of the invention. In this embodiment, the temperature regulation layer **110** includes a pressure portion **110B**. The pressure portion **110B** allows for the ability to increase or decrease the firmness of the temperature regulation layer **110** and thus the cooling platform **100** by the addition of gases such as oxygen. This feature can be predetermined or varied as set forth below.

In an embodiment, the pressure portion **110B** can include a means for inflating or deflating **115** the pressure portion **110B** and the temperature regulation layer **110**. The means for inflating and deflating **115** can include a variety of structures designed for air intake and out take. Often, the structures involved in such means include a protruding valve stem and a cap. The valve stem can be connected or coupled with a threaded portion for attachment to a mechanical or electrical pump, or can be comprised of a plastic valve allowing for human pressure inflation.

In an embodiment, the means for inflating or deflating can interconnect the pressure portions **110B** held within the plurality of angled segments **120**. In another embodiment, each pressure portion **110B** can be provided for individually within each angled segment **120** at either a fixed pressure or established using the above mentioned interconnected means.

FIG. 8 and FIG. 9 illustrate an alternative embodiment of the invention. In this embodiment, the temperature regulation layer **110** is adapted to hold a composition **110A** in a single angled segment **120**. Therefore, the temperature regulation layer **110** becomes the single angled segment **120**. The perimeter of the angled segment **120**, which includes a top side and a bottom side, is sealed preventing the composition **110A** from leaking.

FIGS. 10 and 11 illustrate another alternative embodiment of the invention. In this particular embodiment, the temperature regulation layer **110/120** is adapted to hold the composition **110A**. In this embodiment, the temperature regulation layer **110/120** has an angled segment **120** formed as described herein. However, this embodiment does not include the channeled covering layer **150** as well as support layer **140**.

FIGS. 12 and 13 illustrate another embodiment of the invention. In this embodiment, the temperature regulation layer **110** adapted to hold the composition **110A**, has a plurality of angled segments **120**. And as already described herein, the angled segments **120** are formed by a top side and a bottom side at a predefined distance, and by channels **130**. In an embodiment, the channels **130** may completely segment the plurality of angled segments **120**.

As mentioned in conjunction with the channeled covering layer **150**, the temperature regulation layer **110** may be comprised of similar materials making up the channeled covering layer **150**. The temperature regulation layer **110**, in an embodiment, may also be plastic or of similar material, and in another embodiment be such that the composition **110A** is viewable through clear material.

In use, the cooling platform **100** is able to regulate the temperature of an object. The object contacts the channeled

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covering layer **150** exerting pressure over the cooling platform **100**. The support layer **140** is designed to be sufficiently pliable to deform and sufficiently rigid to withstand collapse in response to the weight of the object. As stated herein, the support layer **140** can be comprised of a wide variety of components.

Depending on the composition **110A** used, the temperature regulation layer **110** transfers heat from the object. In further effectuating heat transfer, the channels **130** have at least two advantages. First, the channels **130** are designed to mix air with the cooling process between the object and the channeled covering layer **150**. Second, the channels **130** substantially prevent or minimize the composition **110A** from being pushed out of the angled segment **120**. Obviously, in other embodiments presented herein, the angled segments **120** can be completely segmented, fully preventing such an issue. The channeled covering layer **150** also aids in effectuating heat transfer from the object by its composition of channels. Of course, the degree of such aid depends in large part on the type of material used with the cooling platform **100**.

In adjusting to accommodate the object, the pressure portions **110B** are used. As stated above, the pressure portions **110B** can be individual and predetermined or variable and interconnected. Thus, the interconnected pressure portions **110B** can be varied through the means for inflating and deflating **115**. Also, as stated herein, the channeled covering layer **150** can provide a degree of comfort and firmness depending on the material used, lending to the overall versatility of the cooling platform **100**.

The invention contains a large amount of advantages. An advantage of the invention is the composition **110A**. The composition **110A** is able to be re-used without the need for electricity, refrigeration, additional treatments, or extraneous equipment. The advantage stems from the components within the composition **110A**, which effectively keep a temperature of 3-4 degrees Fahrenheit lower than body temperature. This particular composition **110A** is able to recharge after the alleviation of pressure (after the object moves). This particular advantage further allows for low-cost and eco-friendly solutions to temperature regulating and aids in the "mobility" aspect of the invention by not requiring input from other sources and by virtue of being a non-toxic substance.

Another advantage of the invention is the unique design. The design enhances and optimizes the cooling performance. The channels **130** allow for a mixture of air flow between the object and the cooling platform **100**, effectively cooling the object at a quicker rate. Furthermore, the presence of the predefined distance from the top and bottom of the angled segment **120**, essentially prevents the dispersion of the composition **110A** from the pressure the object exerts on the cooling platform **100**. The overall effect increases the rate of cooling on the targeted object.

Another advantage of the invention is the interconnected pressure portions **110B**. The pressure portions **110B** provide the ability to increase or decrease the overall pressure of the cooling platform **100**. This feature is particularly advantageous given the large variation in object weight.

While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely illustrative and not restrictive of the current invention, and that this invention is not restricted to the specific constructions and arrangements shown and described since modification can occur to those ordinarily skilled in the art.

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What is claimed is:

1. A cooling platform comprising:

a temperature regulation layer comprising a cooling composition that absorbs heat when activated and releases heat when deactivated,

wherein the cooling composition undergoes an endothermic reaction when activated,

wherein the endothermic reaction is activated at least partially by an application of pressure, and

wherein the cooling platform is repeatedly activatable and deactivatable.

2. The cooling platform as recited in claim 1, wherein the temperature regulation layer has a top side, a bottom side, at least one angled segment, and at least one channel.

3. The cooling platform as recited in claim 2, wherein the cooling composition is between the top side and the bottom side.

4. The cooling platform as recited in claim 1, wherein the cooling composition does not require refrigeration or freezing prior to use.

5. The cooling platform as recited in claim 1, further comprising a support layer, wherein the support layer comprises an elastic material that deforms and reforms upon an application and a release of pressure, respectively.

6. The cooling platform as recited in claim 5, wherein the support layer is secured to a bottom side of the temperature regulation layer.

7. The cooling platform as recited in claim 1, further comprising a covering layer, wherein the covering layer at least partially encompasses the temperature regulation layer.

8. The cooling platform as recited in claim 1, wherein the cooling composition includes polyacrylamide.

9. The cooling platform as recited in claim 1, wherein the cooling composition includes alginic acid.

10. The cooling platform as recited in claim 1, wherein the cooling composition activates at least in part upon the application of the pressure and undergoes a subsequent recharge upon a release of the pressure.

11. The cooling platform as recited in claim 1, further comprising a support layer that is bonded to a bottom side of the temperature regulation layer.

12. The cooling platform as recited in claim 11, wherein the support layer comprises an elastic material that deforms and reforms upon an application and a release of pressure, respectively.

13. The cooling platform as recited in claim 12, wherein the elastic material is a foam.

14. A cooling platform comprising:

a temperature regulation layer comprising a cooling composition,

wherein the cooling composition does not require electricity, refrigeration, or freezing prior to use,

wherein the cooling composition undergoes an endothermic reaction upon activation to absorb heat,

wherein the endothermic reaction is activated at least partially by an application of pressure,

wherein the cooling composition undergoes an exothermic reaction upon deactivation to release heat,

wherein the exothermic reaction is achieved by removing the pressure, and

wherein the cooling platform is repeatedly activatable and deactivatable.

15. The cooling platform as recited in claim 14, further comprising a support layer secured to a bottom side of the temperature regulation layer.

16. The cooling platform as recited in claim 15, wherein the support layer includes a foam.

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17. The cooling platform as recited in claim 14, further comprising a covering layer positioned over a top side of the temperature regulation layer.

18. The cooling platform as recited in claim 14, wherein the temperature regulation layer includes at least one angled segment, at least one channel, and a sealed perimeter. 5

19. The cooling platform as recited in claim 14, wherein at least a portion of the cooling composition is viewable through the temperature regulation layer.

20. A cooling platform comprising: 10

a temperature regulation layer including a top side, a bottom side, and at least one angled segment;

a cooling composition between the top side and the bottom side,

wherein the cooling composition absorbs heat when activated and releases heat when deactivated, 15

wherein the cooling composition activates at least in part upon an application of pressure and deactivates at least in part upon a release of the pressure;

a support layer secured to the bottom side; and 20

a covering layer positioned over the top side, wherein the cooling platform is repeatedly activatable and deactivatable.

* * * * *

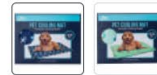
EXHIBIT 3

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